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Term: L1 with (biosynthesis or synthe?)

Display: 50 **Documents in Display Format:** - **Starting with Number** 1

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DATE: Thursday, March 21, 2002 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
DB=USPT,PGPB,JPAB,EPAB,DWPI; PLUR=YES; OP=ADJ			
L2	L1 with (biosynthesis or synthe?)	3	L2
L1	CMP-NeuAc or CMP-sialic acid	149	L1

END OF SEARCH HISTORY

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=> d his

     (FILE 'HOME' ENTERED AT 11:01:59 ON 21 MAR 2002)

     INDEX 'ADISALERTS, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, AQUASCI,
     BIOBUSINESS, BIOCOMMERCE, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO,
CABA,
     CANCERLIT, CAPLUS, CEABA-VTB, CEN, CIN, CONFSCI, CROPB, CROPU, DDFB,
     DDFU, DGENE, DRUGB, DRUGLAUNCH, DRUGMONOG2, ...' ENTERED AT 11:02:15 ON
     21 MAR 2002
               SEA E.COLI(W)K1
              ---------
                1   FILE BIOBUSINESS
                4   FILE BIOCOMMERCE
              142   FILE BIOSIS
                7   FILE BIOTECHABS
                7   FILE BIOTECHDS
               91   FILE BIOTECHNO
                6   FILE CABA
                7   FILE CANCERLIT
              140   FILE CAPLUS
                2   FILE CEABA-VTB
                2   FILE CIN
                9   FILE CONFSCI
                0*  FILE CROPU
               SEA E.COLI(W)K1 OR (ESCHERICHIA.COLI K1)
              ---------
                3   FILE ADISALERTS
                1   FILE AGRICOLA
                5   FILE BIOBUSINESS
                4   FILE BIOCOMMERCE
              276   FILE BIOSIS
               22   FILE BIOTECHABS
               22   FILE BIOTECHDS
              157   FILE BIOTECHNO
               12   FILE CABA
               11   FILE CANCERLIT
              227   FILE CAPLUS
                4   FILE CEABA-VTB
                1   FILE CEN
                3   FILE CIN
               20   FILE CONFSCI
                1   FILE CROPU
                8   FILE DDFB
               19   FILE DDFU
              142   FILE DGENE
                8   FILE DRUGB
                1   FILE DRUGNL
               26   FILE DRUGU
                1   FILE DRUGUPDATES
                1   FILE EMBAL
              244   FILE EMBASE
               72   FILE ESBIOBASE
                4   FILE FSTA
               28   FILE GENBANK
               12   FILE IFIPAT
                5   FILE JICST-EPLUS
              156   FILE LIFESCI
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                245   FILE MEDLINE
                  1   FILE [illegible]TIS
                119   FILE [illegible]ASCAL
                  1   FILE PHAR
                  2   FILE PHIN
                  5   FILE PROMT
                314   FILE SCISEARCH
                 87   FILE TOXCENTER
                 73   FILE USPATFULL
                 20   FILE WPIDS
                 20   FILE WPINDEX
L1                 QUE E.COLI(W) K1 OR (ESCHERICHIA.COLI K1)
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     FILE 'SCISEARCH, BIOSIS, EMBASE, MEDLINE, CAPLUS' ENTERED AT 11:05:30 ON
     21 MAR 2002
L2              14 S L1 AND (SIALIC ACID SYNTHASE)
L3               3 DUP REM L2 (11 DUPLICATES REMOVED)
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=> d l3 ibib ab 1-3

L3 ANSWER 1 OF 3 SCISEARCH COPYRIGHT 2002 ISI (R) DUPLICATE 1
ACCESSION NUMBER: 2001:560698 SCISEARCH
THE GENUINE ARTICLE: 452GU
TITLE: Redirection of sialic acid metabolism in genetically engineered Escherichia coli
AUTHOR: Ringenberg M; Lichtensteiger C; Vimr E (Reprint)
CORPORATE SOURCE: Univ Illinois, Coll Vet Med, Dept Pathobiol, 2522 VMBSB, 2001 S Lincoln Ave, Urbana, IL 61802 USA (Reprint); Univ Illinois, Coll Vet Med, Dept Pathobiol, Urbana, IL 61802 USA
COUNTRY OF AUTHOR: USA
SOURCE: GLYCOBIOLOGY, (JUL 2001) Vol. 11, No. 7, pp. 533-539. Publisher: OXFORD UNIV PRESS INC, JOURNALS DEPT, 2001 EVANS RD, CARY, NC 27513 USA. ISSN: 0959-6658.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 28

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Most microorganisms do not produce sialic acid (sialate), and those that do appear to use a biosynthetic mechanism distinct from mammals. Genetic hybrids of nonpathogenic, sialate-negative laboratory Escherichia call K-12 strains designed for the de nora synthesis of the polysialic acid capsule from **E**, **coli K1** proved useful in elucidating the genetics and biochemistry of capsule biosynthesis, In this article we propose a dynamic model of sialometabolism to investigate the effects of biosynthetic nea (N-acetylneuraminic acid) and catabolic nan (N-acylneuraminate) mutations on the flux of intermediates through the sialate synthetic pathway, Intracellular sialate concentrations were determined by high pH anion exchange chromatography with pulsed amperometric detection. The results indicated that a strain carrying a null defect in the gene encoding polysialyltransferase (neuS) accumulated > 50 times more CMP-sialic acid than the wild type when strains were grown in a minimal medium supplemented with glucose and casamino acids. Metabolic accumulation of CMP-sialic acid depended on a functional **sialic acid synthase** (neuB), as shown by the inability of a strain lacking this enzyme to accumulate a detectable endogenous sialate pool. The neuB mutant concentrated trace sialate from the medium, indicating its potential value for quantitative analysis of free sialic acids in complex biological samples. The Function of the sialate aldolase (encoded by nanA) in limiting intermediate flux through the synthetic pathway was determined by analyzing free sialate accumulation in neuA (CMP-sialic acid synthetase) nanA double mutants. The combined results demonstrate how E, coli avoids a futile cycle in which biosynthetic sialate induces the system for its own degradation and indicate the feasibility of generating sialooligosaccharide precursors through targeted manipulation of sialate metabolism.

L3 ANSWER 2 OF 3 SCISEARCH COPYRIGHT 2002 ISI (R) DUPLICATE 2
ACCESSION NUMBER: 95:66280 SCISEARCH
THE GENUINE ARTICLE: QB307
TITLE: NUCLEOTIDE-SEQUENCE AND GENETIC-ANALYSIS OF THE NEUD AND NEUB GENES IN REGION-2 OF THE POLYSIALIC ACID GENE-CLUSTER

OF **ESCHERICHIA-COLI-K1**

AUTHOR: AN[redacted]NZIATO P W; WRIGHT L F; VANN W[redacted] SILVER R P (Reprint)

CORPORATE SOURCE: UNIV ROCHESTER, MED CTR, DEPT MICROBIOL & IMMUNOL, BOX 672, 601 ELMWOOD AVE, ROCHESTER, NY, 14642 (Reprint); UNIV ROCHESTER, SCH MED & DENT, DEPT PEDIAT, ROCHESTER, NY, 14642; UNIV ROCHESTER, SCH MED & DENT, DEPT MICROBIOL & IMMUNOL, ROCHESTER, NY, 14642; CTR BIOL EVALUAT & RES, BACTERIAL POLYSACCHARIDES LAB, BETHESDA, MD, 20892

COUNTRY OF AUTHOR: USA

SOURCE: JOURNAL OF BACTERIOLOGY, (JAN 1995) Vol. 177, No. 2, pp. 312-319.
ISSN: 0021-9193.

DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 60

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The K1 capsular polysaccharide, a polymer of sialic acid, is an important virulence determinant of extraintestinal pathogenic Escherichia coli. The genes responsible for the synthesis and expression of the polysialic acid capsule of E. call K1 are located on the 17-kb kps gene cluster, which is functionally divided into three regions. Central region 2 encodes proteins necessary for the synthesis, activation, and polymerization of sialic acid, while flanking regions 1 and 3 are involved in polymer transport to the cell surface. In this study, we identified two genes at the proximal end of region 2, neuD and neuB, which encode proteins with predicted sizes of 22.7 and 38.7 kDa, respectively. Several observations suggest that the neuB gene encodes **sialic acid synthase**. EV24, a neuB chromosomal mutant that expresses a capsule when provided exogenous sialic acid, could be complemented in trans by the cloned neuB gene. In addition, NeuB has significant sequence similarity to the product of the cpsB gene of Neisseria meningitidis group B, which is postulated to encode **sialic acid synthase**. We also present data indicating that neuD has an essential role in K1 polymer production. Cells harboring pSR426, which contains all of region 2 but lacks region 1 and 3 genes, produce an intracellular polymer. In contrast, no polymer accumulated in cells carrying a derivative of pSR426 lacking a functional neuD gene. Unlike strains with mutations in neuB, however, neuD mutants are not complemented by exogenous sialic acid, suggesting that NeuD is not involved in sialic acid synthesis. Additionally, cells harboring a mutation in neuD accumulated sialic acid and CMP-sialic acid. We also found no significant differences between the endogenous and exogenous sialyltransferase activities of a neuD mutant and the wild-type organism. NeuD shows significant similarity to a family of bacterial acetyltransferases, leading to the theory that NeuD is an acetyltransferase which may exert its influeuce through modification of other region 2 proteins.

L3 ANSWER 3 OF 3 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.DUPLICATE 3

ACCESSION NUMBER: 1992:27239 BIOSIS
DOCUMENT NUMBER: BA93:16514
TITLE: BIOSYNTHESIS OF THE POLYSIALIC ACID CAPSULE IN **ESCHERICHIA-COLI K1** COLD INACTIVATION OF **SIALIC ACID SYNTHASE** REGULATES CAPSULE EXPRESSION BELOW 20 C.

AUTHOR(S): MERKER R I; TROY F A

CORPORATE SOURCE: DEP. BIOL. CHEM., UNIV. CALIF. SCH. MED., DAVIS, CALIF. 95616-8635.

SOURCE: GLYCOBIOLOGY, (1990) 1 (1), 93-100.
CODEN: GLYCE3.
FILE SEGMENT: BA, OLD
LANGUAGE: English

AB When neuroinvasive **Escherichia coli K1** cells are grown at temperatures below 20.degree. C, they fail to synthesize the .alpha.-2,8-linked polysialic acid (polySia) capsule. The objective of this study was to use a genetic and biochemical approach to analyse why capsule expression was defective at cold temperatures. The strategy was to construct **E. coli K1**-derived mutants with defects in activation and degradation of Sia. The inability to degrade Sia because of a defect in the Sia-specific aldolase permitted accurate quantitation of Sia and CMP-Sia. Strains EV5 and EV90 possessed a defective CMP-Sia synthetase and were unable to activate Sia. These mutants were then used to study how synthesis of Sia, CMP-Sia, and the polySia capsule was affected by growth at 15.degree. C. In contrast to wild type strains, the mutants accumulated Sia in considerable quantities (up to 100 nmol mg protein-1) at 37.degree. C. However, no Sia was detected after growth at 15.degree. C. A temperature upshift experiment showed that the intracellular concentration of Sia increased ca. 3-fold within 5-10 min after shift from 15 to 37.degree. C, even in the presence of inhibitors of protein synthesis or transcription initiation. An in vitro assay for Sia synthase showed that Sia was synthesized at 37.degree. C in cell-free extracts from both 37 and 15.degree. C grown cells, but that no synthesis occurred when the same extracts were assayed at 15.degree. C. These results indicated that Sia synthase was a cold sensitive enzyme that was synthesized at 15.degree. C, but was reversibly inactivated at low temperatures. Radiolabelling experiments using [14C]Sia showed that CMP-Sia synthetase and the polyST polymerase were also cold sensitive. We conclude that polySia capsule synthesis in **E. coli K1** strains at 15.degree. C is regulated primarily at the level of Sia synthase, rather than transcriptionally controlled.

L3 ANSWER 12 OF 12 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1991:225381 CAPLUS
DOCUMENT NUMBER: 114:225381
TITLE: Biosynthesis of the polysialic acid capsule in Escherichia coli K1. Cold inactivation of **sialic acid synthase** regulates capsule expression below 20.degree.C
AUTHOR(S): Merker, Robert I.; Troy, Frederic A.
CORPORATE SOURCE: Sch. Med., Univ. California, Davis, CA, 95616-8635, USA
SOURCE: Glycobiology (1990), 1(1), 93-100
CODEN: GLYCE3
DOCUMENT TYPE: Journal
LANGUAGE: English

AB When neuroinvasive E. coli K1 cells are grown at temps. <20.degree., they fail to synthesize the .alpha.-2,8-linked polysialic acid (polySia) capsule. The objective of this study was to use a genetic and biochem. approach to analyze why capsule expression was defective at cold temps. The strategy was to construct E. coli K1-derived mutants with defects in activation and degrdn. of Sia. The inability to degrade Sia because of a defect in the Sia-specific aldolase permitted accurate quantitation of Sia and CMP-Sia. Strains EV5 and EV90 possessed a defective CMP-Sia synthetase and were unable to activate Sia. These mutants were then used to study how synthesis of Sia, CMP-Sia, and the polySia capsule was affected by growth at 15.degree.. In contrast to wild type strains, the mutants accumulated Sia in considerable quantities at 37.degree.. However, no Sia was detected after growth at 15.degree.. The intracellular concn. of Sia increased .apprx.3-fold within 5-10 min after shift from 15 to 37.degree., even in the presence of inhibitors of protein synthesis or transcription initiation. An in vitro assay for Sia synthase showed that Sia was synthesized at 37.degree. in cell-free exts. from both 37 and 15.degree. grown cells, but that no synthesis occurred when the same exts. were assayed at 15.degree.. These results indicated that Sia synthase was a cold-sensitive enzyme that was synthesized at 15.degree., but was reversibly inactivated at low temps. Radiolabeling expts. using [14C]Sia showed that CMP-Sia synthetase and the polyST polymerase were also cold-sensitive. PolySia capsule synthesis in E. coli K1 strains at 15.degree. is apparently regulated at the level of Sia synthase, rather

L3 ANSWER 1 OF 12 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:527115 CAPLUS
DOCUMENT NUMBER: 135:254272
TITLE: Redirection of sialic acid metabolism in genetically engineered Escherichia coli
AUTHOR(S): Ringenberg, Michael; Lichtensteiger, Carol; Vimr, Eric
CORPORATE SOURCE: Department of Pathobiology, College of Veterinary Medicine, University of Illinois at Urbana-Champaign, Urbana, IL, 61802, USA
SOURCE: Glycobiology (2001), 11(7), 533-539
CODEN: GLYCE3; ISSN: 0959-6658
PUBLISHER: Oxford University Press
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Most microorganisms do not produce sialic acid (sialate), and those that do appear to use a biosynthetic mechanism distinct from mammals. Genetic hybrids of nonpathogenic, sialate-neg. lab. Escherichia coli K-12 strains designed for the de novo synthesis of the polysialic acid capsule from E. coli K1 proved useful in elucidating the genetics and biochem. of capsule biosynthesis. In this article we propose a dynamic model of sialo metab. to investigate the effects of biosynthetic neu (N-acetylneuraminic acid) and catabolic nan (N-acylneuraminate) mutations on the flux of intermediates through the sialate synthetic pathway. Intracellular sialate concns. were detd. by high pH anion exchange chromatog. with pulsed amperometric detection. The results indicated that a strain carrying a null defect in the gene encoding polysialyltransferase (neuS) accumulated > 50 times more CMP-sialic acid than the wild type when strains were grown in a minimal medium supplemented with glucose and casamino acids. Metabolic accumulation of CMP-sialic acid depended on a functional **sialic acid synthase** (neuB), as shown by the inability of a strain lacking this enzyme to accumulate a detectable endogenous sialate pool. The neuB mutant concd. trace sialate from the medium, indicating its potential value for quant. anal. of free sialic acids in complex biol. samples. The function of the sialate aldolase (encoded by nanA) in limiting intermediate flux through the synthetic pathway was detd. by analyzing free sialate accumulation in neuA (CMP-sialic acid synthetase) nanA double mutants. The combined results demonstrate how E. coli avoids a futile cycle in which biosynthetic sialate induces the system for its own degrdn. and indicate the feasibility of generating sialooligosaccharide precursors through targeted

L15 ANSWER 46 OF 53 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1979:148289 CAPLUS
DOCUMENT NUMBER: 90:148289
TITLE: Genetical and biochemical studies of glucosephosphate isomerase deficient **mutants** in Saccharomyces cerevisiae
AUTHOR(S): Herrera, Luis S.; Pascual, Carlos
CORPORATE SOURCE: Dep. Microb. Genet. Biochem., Natl. Cent. Sci. Res., Havana, Cuba
SOURCE: J. Gen. Microbiol. (1978), 108(2), 305-10
CODEN: JGMIAN; ISSN: 0022-1287
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A no. of glucose-neg. **mutants** of S. cerevisiae were isolated that contained very low activities of glucose phosphate isomerase (EC 5.3.1.9; I). **Mutants** almost totally lacking I (<1% of wild-type activity) grew on fructose if provided with a small quantity of glucose. Larger amts. of glucose led to the **accumulation** of **glucose 6-phosphate** and growth inhibition. These **mutants** did not grow on galactose. Other **mutants** with low I activities (.apprx.1% of wild type) grew on fructose alone and on galactose. The **mutant** characters were detd. in both cases by single gene mutations mapped on chromosome II and presumably identify a